



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
INTRA-AGENCY MEMORANDUM
Engineering Analysis

Permit Writer	Cheryl L. Mayo
Air Permit Manager	James E. Kyle, P.E.
Memo To	File
Date	February 10, 2022
Facility Name	AMPAC Fine Chemicals Virginia LLC
Registration Number	50856
Application No.	23 (SOP amendment), 25 (minor NSR)
Date Fee Paid	February 11, 2020 (SOP amendment), July 13, 2021 (minor NSR)
Amount (\$)	\$10,145 = 4,476 (SOP amendment), \$5,669 (minor NSR)
Distance to SNP (km)	>100
Distance to JRF (km)	>100
FLM Notification (Y/N)	N
Application Fee Classification (Title V, Synthetic Minor, True Minor)	Title V
Permit Writer Signature	
Permit Manager Signature	

I. Introduction

AMPAC Fine Chemicals Virginia, LLC is a Contract Manufacturing Organization (CMO) that primarily manufactures pharmaceutical ingredients and intermediates on a contract basis. The facility is located at 2820 N. Normandy Drive, Petersburg, Virginia. Originally permitted on November 1, 1977 as Hexagon/Lee Laboratories, the facility was acquired by B. I. Chemical in 1993 (and was subsequently owned by UniTao Pharmaceuticals from 2014 to 2016). AMPAC Fine Chemicals Virginia, LLC acquired the facility in 2016, and submitted a change of ownership form on September 21, 2016.

State Operating Permit Amendment Request (50856-23):

The current State Operating Permit amendment request (50856-23), dated February 7, 2020, was received in the Piedmont Regional Office on February 10, 2020. The permit application fee of \$4,476 was received on February 11, 2020, and the application was initially deemed complete on that date. The responsible official for the facility was replaced after the permit application was deemed complete, and an updated Document Certification Form, signed by the new plant manager, was received on August 6, 2020. The permit action is considered a significant amendment to a State Operating Permit due to requested changes in control, monitoring, and testing requirements, though not all of the requested changes were made to the permit. As discussed in Section III.C, some of the changes that are implemented in the draft permit meet the definition of Significant Amendments found in 9 VAC 5-80-990. Details of the SOP amendment request are included in Section III.C.

Minor NSR (Article 6) Permit Request (50856-25):

Additionally, a minor NSR application (50856-25) for a facility expansion project, dated July 7, 2021, was received in the Piedmont Regional Office on July 9, 2021. The permit application fee of \$5,669 was received on July 13, 2021. An updated application and supplemental information were submitted on August 17, 2021 (received on August 26, 2021), and additional information was submitted on October 22, 2021 (process emissions calculations) and December 16, 2021 (final engine specifications). The application was deemed complete on December 16, 2021. This NSR permit request is being added to the State Operating Permit amendment request submitted in 2020 (application number 50856-23). The resulting permit will be a combined NSR/SOP.

The AMPAC facility expansion will include the construction of process equipment and support equipment (boilers, emergency generators) in Building 7100 (Kilo Lab) and Building 7200 (Hybrid Manufacturing Facility (HMF) Process Building). Phlow (a partnering pharmaceutical manufacturer) will lease these buildings.

Phlow will convert the pharmaceutical ingredients manufactured into the Kilo Lab into finished product.

The HMF Building will have batch capabilities, and the finished product made in the HMF Building will be transported to a warehouse owned by Phlow, which will be located across the road from the AMPAC facility, at 2821 N. Normandy Drive. A 1500 kW diesel emergency generator will be located in the HMF Building.

Portable reactors that can be utilized throughout the facility as needed will be added to the permit equipment list. The application also included two small natural gas-fired boilers (categorically exempt), two natural gas-fired heating hot water boilers (also categorically exempt), and a 1500 kW diesel emergency generator, to be located at the new warehouse (SAPIR) building.

The permittee stipulated that the project would be subject to Article 6 for the VOC process emissions, so the primary permit type was determined to be a minor NSR permit. The permit will be issued as a combined NSR/SOP, with the approved permit changes requested in application number 50856-23 also included.

The company is located on a site which is suitable from an air pollution standpoint. It is located in Petersburg, which is an attainment area for all pollutants. No Local Governing Body Certification Form was required since this is not a Greenfield source.

The last air inspection was conducted at the facility jointly with EPA Region III personnel on October 23, 2019, and the facility was found to be operating in compliance at that time.

The facility recently signed a Consent Order (effective January 13, 2022) to resolve NOV's issued on August 12, 2019 and December 18, 2019.

II. Emission Unit(s)/Process Description:

The existing AMPAC facility is described as a Contract Manufacturing Organization (CMO) Facility and is designed to manufacture chemicals (typically intermediate products used in the manufacture of pharmaceutical ingredients) using variously configured processes with component equipment located in “bays”, currently in Buildings S1, S2, S3, and S5. The process equipment located in each bay is described in the equipment list. The products manufactured by the facility are based on current contracts and are continuously subject to change.

VOC and acid/base gas emissions are controlled using combinations of condensers and scrubbers (with the exception of ethane-emitting processes, which would present a safety hazard), and all bays vent to the facility’s RTO Control System (regenerative thermal oxidizer followed by an acid gas scrubber).

New equipment to be constructed in the facility expansion project includes:

Building 7100 (Kilo Lab)

Reference No.	Equipment Description	Rated Capacity	Delegated Federal Requirements
RE-601 through 604	Portable Glass Reactor	100 liters (each)	--
RE-605, RE-606	Portable Glass Reactor	50 liters (each)	--
RE-607, RE-608	Portable Glass Reactor	100 liters (each)	--
RE-609, RE-610	Portable Glass Reactor	10 liters (each)	--
RE-611 through 620	Portable Glass Reactor	1 liter (each)	--
PFR-601, 602, 605, 606	Portable 24” x 1/4” Plug Flow Reactor	100 liters (each)	--
PFR-603, 604, 607, 608	Portable 24” x 3/8” Plug Flow Reactor	100 liters (each)	--
LS-601 through 604	Glass Liquid-Liquid Separator	0.5 liter (each)	--
FL-601	Portable Aurora Filter Dryer	30 liters	--
TK-6001, 6003, 6006, 6007, 6009, 6012, 6013, 6015, 6018, 6019, 6021, 6024	Process Vessels (12)	10 gallons (each)	--
TK-6002, 6004, 6005, 6008, 6010, 6011, 6014, 6016, 6017, 6020, 6022, 6023	Process Vessels (12)	20 gallons (each)	--
TK-6025	Catch Tank (for overflow)	100 gallons	--

Building 7200 (HMF Process Building)

Reference No.	Equipment Description	Rated Capacity	Delegated Federal Requirements
RE-7001 through 7003, RE-7101 through 7103	Reactor and Associated Process Condenser (6)	2,000 gallons (each)	--
RE-7004, RE-7104	Reactor and Associated Process Condenser (2)	1,000 gallons (each)	--
RE-7101, RE-7105	Portable Reactor Skid and Associated Process Condenser	100 gallons (each)	--
TK-7011, TK-7111	Process Vessel	500 gallons (each)	
TK-7105	Catch Tank	3000 gallons	
CG-7101	Inverting Filter Centrifuge	--	--
DR-7001	Filter/Dryer	--	--
DR-7101	Conical Dryer	--	--
HMF-GEN	Caterpillar Model 3512 Emergency Diesel Engine	1500 kW	

Building 9000 (SAPIR Building)

Reference No.	Equipment Description	Rated Capacity	Delegated Federal Requirements
SAPIR-GEN	Kohler Model KD1500 Emergency Diesel Engine	1500 kW	--

Portable Equipment (may be relocated in the plant as needed)

Reference No.	Equipment Description	Rated Capacity	Delegated Federal Requirements
CG-9903	Portable Centrifuge	--	--
FL-9705 through 9708, FL-9710, FL-9903, FL-9918, FL-9919	Portable Filters (8)	--	--
CG-9903	Portable Centrifuge	--	--
TK-9701	Process Vessel	160 gallons	--
TK-9702	Process Vessel	160 gallons	--
TK-9902	Process Vessel	160 gallons	--

Note that this list does not include exempt emission units.

III. Regulatory Review

A. 9VAC5 Chapter 80, Part II, Article 6 – Minor New Source Review

The provisions of Article 6¹ apply throughout Virginia to (i) the construction of any new stationary source, (ii) the construction of any project (which includes the affected emissions units), and (iii) the reduction of any stack outlet elevation at any stationary source.

¹ Language is paraphrased from 9VAC5-80-1100.

The NSR application is for a change that meets the definition of “project” contained in 9VAC5-80-1110 C. To be exempt from permitting, the regulations provide that a project must be exempt under both the provisions of 9VAC5-80-1105 B through D as a group and the provisions of 9VAC5-80-1105 E and F.

The facility proposes construction of affected emission units listed in 9VAC5-80-1105 B. The natural gas-fired boilers/heating hot water boilers are listed at 9VAC5-80-1105B.1.a(4). Natural gas boilers with a maximum rated heat input capacity less than 50 MMBtu/hr are exempt from permitting. There are two proposed natural gas-fired boilers (BS-6001 and BS-6002, located in the Kilo Lab) rated at 3 MMBtu/hr each, and two proposed natural gas-fired heating hot water boilers (BS-9101 and BS-9102, located in the SAPIR Building) rated at 1.25 MMBtu/hr each, included in the project. Because AMPAC is located in Petersburg, which is included in an ozone maintenance area designated in 9VAC5-20-203 (Richmond Ozone Maintenance Area), the maximum heat input capacity of the boilers is aggregated to determine applicability. Since the total heat input capacity (8.5 MMBtu/hr) is less than the exemption threshold, the boilers are categorically exempt.

The project has no other affected emissions units listed in 9VAC5-80-1105 B (the proposed emergency diesel engines exceed the exemption threshold). In determining if a project is exempt under 9VAC5-80-1105 D, a calculation of the uncontrolled emission rate (UER) increase from the project is required. The project’s increase is the sum of the UER increases from each affected emissions unit not listed in 9VAC5-80-1105 B. An emissions unit’s increase is the difference between the new UER after the project (NUE) and the current UER (CUE) for that emissions unit and cannot be less than zero.

Emissions from the 1500 kW HMF-GEN emergency engine were calculated using Caterpillar manufacturer’s data for Model 3512C (“Nominal” emissions plus 25% for NO_x, and “Site Variation” emissions for CO, VOC, and PM at 10% load, since these were worst-case). AP-42 factors were used for the remaining criteria pollutants. Since Kohler did not provide emissions data for the 1500 kW SAPIR-GEN emergency engine, other than certification that it meets the NSPS Subpart IIII Tier 2 standards for NO_x, CO, and VOC, AP-42 factors were used to calculate hourly emissions of all criteria pollutants based on the maximum fuel heat input.

As shown in the summary table below, the project’s increase for NO_x exceeds the respective permitting threshold; therefore, the project is subject to the permitting requirements of Article 6.

Additionally, the permittee has stipulated that the process emissions (VOC) are subject to Article 6. The VOC emissions in the table below include only emissions from the two new emergency engines, which alone would not exceed the VOC exemption level.

	CUE (TPY)	NUE (TPY)	UER (TPY)	Exemption (TPY)
SO ₂	0	3.82	3.82	10
PM	0	0.28	0.28	15
PM10	0	0.56	0.56	10
PM2.5	0	0.56	0.56	6
CO	0	3.95	3.95	100
NO _x	0	18.72	18.72	10
VOC	0	0.51	0.51	10

As described in Section III.E, the emergency engines are in a source category subject to a standard promulgated pursuant to 40 CFR 63 (Subpart ZZZZ). None of the affected emissions units are subject to federal hazardous air pollutant new source review. Therefore, the project is exempt from the state toxics rule (9VAC5-80-1105F) and is not subject to Article 6 for toxic pollutant emissions. The facility will continue to submit process change notifications with toxics evaluation to ensure that future processes will remain exempt from the toxics rule.

B. 9VAC5 Chapter 80, Part II, Article 8 and Article 9 – PSD Major New Source Review and Non-Attainment Major New Source Review

The facility is a synthetic minor source located in an attainment area for all pollutants. The facility submitted calculations from “Emissions Master” for two representative pharmaceutical ingredients that are or may be manufactured at the AMPAC facility to demonstrate that the project would not be a major modification, and the current process VOC emissions limitations in **Condition 27** of the draft permit (498.7 lb/hr and 72.2 tons/yr) will remain unchanged. PSD Major and Non-Attainment Major New Source do not apply.

C. 9VAC5 Chapter 80, Part II, Article 5 – State Operating Permit (SOP)

The State Operating Permit is necessary in order to give the facility enforceable limits on VOC and Hazardous Air Pollutants, making it a synthetic minor source for Title V purposes and an area source for hazardous air pollutants/MACT applicability.

The SOP portions of this permit action (Conditions with 9VAC5-80-850 citations) are being processed in accordance with significant amendment procedures in accordance with 9 VAC 5-80-990. Only the conditions with the 9 VAC 5-8-850 citations are subject to public comment. The details of the request are described below.

Request #1: Replace the description of the equipment in each bay to “Batch reactor train consisting of equipment including reactors, receivers, distillation systems, centrifuges, mill systems, dryers, process tanks, and related process equipment.”

Response: The equipment list should describe what actually exists in each bay, not what may exist in each bay, or in a building. According to the Article 6 Minor Source Review Permit Program Manual (APG-350) page 11-15:

“Each emission unit should be listed as described in the application with sufficient detail to distinguish it from other emission units. The equipment listing should be as detailed as necessary to facilitate later inspection of the facility and to delineate which permit conditions apply to individual pieces of equipment. Including reference numbers from the application is recommended to add clarity.”

Equipment specifications for the emission units must also be listed, specifically by type, rated capacity, and size” (see also 9VAC5-80-850 F 3).

A recordkeeping requirement has been added to Condition 42 (Condition 4.a.v.) which states that the facility must maintain complete process flow diagrams for each production line (process change) reported as required by Condition 43. The process flow diagrams must include all process vessels, as defined by 40 CFR 63.11502 (including, but not limited to, reactors, distillation units, centrifuges, mixing vessels, and process tanks). Since dryers are not listed in this definition, the term “dryers” was specifically added. Control devices must also be included with equipment ID. This requirement will assist compliance staff in determining exactly which equipment and control devices are being used for a particular process without fixing that equipment in the permit. This will also help to define any CMPU which is potentially subject to MACT Subpart 6V.

Additionally, the facility must provide a complete count (size and type) of fugitive leak components (Condition 42.a.vii.) to determine compliance with the fugitive emission limits in Condition 30.

Request #2: Restore Bays 4 & 5 to the equipment list.

Response: This change has been made.

Request #3: Change the requirement to measure condenser outlet temperature or condensate leg temperature [Permit Condition 7] to a requirement to monitor condenser coolant temperature once per day.

Response: This condition, which requires reactor and condenser outlet temperature monitoring once per day, was included in the October 2003 SOP. The condition was removed from the permit with the installation of the RTO in 2005.

DEQ disagrees that measurement of condenser outlet temperatures is inappropriate for batch processes. The reactor and condenser outlet temperature are required to be measured once each operating day, not continuously. Furthermore, without sufficient monitoring, this condition is unenforceable. Simply measuring coolant temperature does not ensure that the condenser is operating properly. This change was not made.

Request #4: Remove the phrase, “After control by the condensation systems and scrubbing systems required in Conditions 2, 3, 4, and 6” from the beginning of Condition 7.

Response: VOC emissions controlled by process condensers are further required to be controlled by the RTO; acid gas emissions at the process level are controlled by scrubbers, as well as by the acid gas scrubber which is operated in series with the RTO outlet. VOC and acid/base gas emissions are expected to be controlled by the condensers and scrubbers required for each bay, and the phrase makes this clear. Further, control of emissions by the condensers and scrubbers at the process level is taken into account for the purpose of emissions calculations. The phrase was not removed.

Request #5: Revise the testing requirement in Condition 43 (**Condition 41** of the draft permit) from a 12-hour period every five years to a test for the duration of the batch process every five years.

Response: Since the emissions are variable during different steps of each batch process, testing emissions for the duration of a single batch will more accurately verify the batch emissions estimate submitted by the facility when a new process commences (versus a fixed 12-hour period). This change was made. The length of the test should be determined by the processing length of a batch, subject to approval by the Piedmont Regional Office.

The change in the duration of the testing required by **Condition 41** could be considered a significant change, since the required duration of testing will potentially be reduced to less than 12 hours, to a time period appropriate for a batch. It should be noted that the testing interval could also be longer than 12 hours if that is the time interval appropriate for a complete batch.

A significant change has also been made to the RTO temperature monitoring requirement in **Condition 9**. The requirement to monitor minimum RTO chamber temperature will replace the requirement to monitor RTO temperature setpoint, with provision for a three-hour averaging period. This change will be made after establishment of the minimum chamber temperature required to achieve 95.0% VOC destruction efficiency is determined by the performance test required by **Condition 38**.

D. 9VAC5 Chapter 50, Part II, Article 5 – NSPS

NSPS Subpart IIII

The emergency diesel engines (HMF-GEN and SAPIR-GEN) are subject to NSPS Subpart IIII (New Source Performance Standard: Stationary Compression Ignition Internal Combustion Engines), because they are stationary compression ignition internal combustion engines with displacement less than 30 liters per cylinder, model year 2007 and later. Virginia has not taken delegation of this rule for facilities that are not major sources.

HMF-GEN is a 1500 kW engine-generator set manufactured by Caterpillar (Model 3512), and SAPIR-GEN is a 1500 kW engine-generator set manufactured by Kohler (Model KD1500).

Emission Standards:

The engines are subject to the emission standards of **40 CFR 60.4205(b)**, which references the standards for combustion engine manufacturers in **40 CFR 60.4202**. As emergency stationary CI ICE with maximum engine power less than 2,237 kW and displacement of less than 10 liters per cylinder, the engines are subject to the standards in **40 CFR 60.4202(a)(2)**:

- Tier 2 or Tier 3 emission standards for new nonroad CI engines for the same rated power as described in 40 CFR part 39, appendix I, for all pollutants and the smoke standards as specified in 40 CFR 1039.105 beginning in model year 2007.

The specification sheets submitted with the application show that the proposed engines will meet Tier 2 Standards. There are no performance testing requirements in the NSPS for an emergency diesel engine of this size.

Fuel requirements:

40 CFR 60.4207 requires that the diesel fuel meets the requirements of 40 CFR 1090.305 for nonroad diesel fuel (i.e, maximum sulfur content of 15 ppm or 0.0015% by weight). This is required in **Condition 17**. Diesel fuel is any product that meets the definition for diesel fuel (ASTM D975).

- E. 9VAC5 Chapter 60, Part II, Article 1 – NESHAPS
NESHAPS do not apply.
- F. 9VAC5 Chapter 60, Part II, Article 2 – MACT

MACT Subpart VVVVVV

The facility is a synthetic minor (area) source of HAPs. Any Chemical Manufacturing Process Unit (CMPU) which uses one of the hazardous air pollutants listed in Table 1 to Subpart VVVVVV of Part 63 is subject to the requirements of MACT Subpart VVVVVV (National Emissions Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources). Virginia has taken delegation of this rule. The MACT applies only to the specific CMPU which uses the Table 1 HAP, not to the entire facility. Since this is a CMO, and the product mix is always changing, the MACT will only apply to a CMPU (batch train) that is using a Table 1 HAP at that particular time. The addition of the recordkeeping requirement in **Condition 42.a.v**. Will help to identify CMPUs which are potentially subject to MACT Subpart VVVVVV. Requirements from MACT Subpart VVVVVV will be incorporated into the facility's Title V permit.

MACT Subpart ZZZZ

The permit also contains equipment that is subject to MACT Subpart ZZZZ, but Virginia has not taken delegation of this rule for facilities that are not major sources. Since the new emergency engines (HMF-GEN and SAPIR-GEN) are subject to NSPS Subpart IIII, compliance with

MACT Subpart ZZZZ will be demonstrated by complying with NSPS Subpart IIII (**40 CFR 63.4390(c)**).

The permit cover letter lists these MACT Subparts (Subpart VVVVVV and Subpart ZZZZ) as potentially applicable.

MACT Subpart I

MACT Subpart I (National Emissions Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks) was potentially applicable to the source when it was promulgated, since the facility was a major source of HAP before 2003. However, there are no records that indicate that the facility operated any equipment in methylene chloride service for more than 300 hours per year while it was a major source. Thus Subpart I requirements did not become applicable to the source before it became an area source of HAP with the issuance of the 2003 State Operating Permit.

A condition limiting equipment to 300 hours per year in methylene chloride service (with associated recordkeeping) was included in the 2003 State Operating Permit, perhaps to ensure that the facility would not be subject to Subpart I, or to clarify that the facility was not subject to Subpart I.

The restriction to 300 hours per year in methylene chloride service, and the associated recordkeeping requirement, remained in the State Operating Permit until 2013, when it was removed at the request of the facility. At that time, the FDA was requiring BI Chemical to manufacture a pharmaceutical product that utilized methylene chloride. However, since the facility was an area source (synthetic minor source of HAP) when the restriction was removed, Subpart I (which applies only to major source of HAP) would not be applicable, even if any equipment was in methylene chloride service for more than 300 hours per year.

G. State Only Enforceable (SOE) Requirements (9VAC5-80-1120 F)

The permit does not include changes in State Only Enforceable requirements from the previous SOP.

H. 9VAC5 Chapter 40, Part II, Existing Sources - Emission Standards

Condition 2 of the March 7, 2019 state operating permit, which is being amended, has been deleted. This condition is taken from an existing source rule (Rule 4-5) for pharmaceutical manufacturing. It was previously added to the permit to ensure that all equipment was required to be sufficiently controlled while the RTO was bypassed. However, since the facility will no longer be allowed to bypass the RTO, the condition is obsolete.

IV. Best Available Control Technology Review (BACT)

BACT applicability is pollutant-by-pollutant based on the permitting applicability thresholds. Each affected emissions unit emitting a pollutant that is subject to permitting shall apply BACT for that pollutant (9VAC5-50-260 C). BACT is applicable for NO_x and VOC.

NO_x emissions from the engines are controlled by the use of EPA Tier II Engines, with electronic fuel injection and either an aftercooler or charge air cooler.

Process VOC emissions are controlled by the RTO (followed by an acid gas scrubber). The RTO is considered BACT for this source type.

The VOC emissions from the emergency engines are controlled by good operating practices and maintenance. Requirements to maintain and operate the source in a manner consistent with good air pollution control practices for minimizing emissions are included in **Condition 48**.

V. Summary of Potential Emissions Increase

The facility's change in PTE is shown in the table below.

Pollutant	Past PTE (TPY)	Future PTE (TPY)	PTE Change (TPY)
PM	11.6	10.6	-1.0
PM10/PM2.5	11.6	12.1	+0.5
SO ₂	54.2	53.0	-1.2
NO _x	58.9	54.1	-4.8
CO	21.7	25.4	+3.7
VOC	89.7	90.7	+1.0

VI. Dispersion Modeling

A. Criteria Pollutants

As shown in the table in Section V, the project does not cause an increase in PTE greater than the respective value of "significant" in 9VAC 5-80-1110C. Therefore, modeling is not required.

B. Toxic Pollutants

Modeling is not required for a project that is exempt from the state toxics rule.

VII. Boilerplates and Boilerplate Deviations

This permit is based on the current permit, issued March 7, 2019. The General and Skeleton SOP boilerplates have not been changed significantly since that time. The permit has been updated for ADA compliance.

Requirements for the new emergency engines have been taken from the Diesel Engine boilerplate. The NO_x emission rate for the proposed emergency engines exceeds the 6.0 g/hp-hr standard included in the boilerplate procedures. However, the engines are for emergency use only (500 hours per year), meet Tier II standards, and are required to have electronic fuel injection and turbocharging, which reduce NO_x emissions.

The permit includes language which is not boilerplate because of its flexibility, and due to the unique variable nature of the facility's operation as a CMO. As discussed below, **Condition 2** for condensers (and new **Condition 4** for scrubbers), as well as **Condition 7** have been changed in this amendment to better reflect current boilerplate, with the requirements to maintain monitoring devices included in **Condition 2 and 4**, and the corresponding monitoring and recordkeeping requirements described separately in **Conditions 7 and 8**. Although the language does not conform exactly to current boilerplate, organizing the conditions this way brings them closer to that of the boilerplate conditions which first require that monitoring devices be installed, followed by separate conditions that describe the parameters measured and how those measurements are to be recorded.

VIII. Compliance Demonstration

A. Initial Compliance Demonstration

Conditions 38-40 have been added as initial compliance demonstrations.

Condition 38 requires initial performance testing be conducted for VOC destruction efficiency to demonstrate compliance with the requirement in **Condition 9** for a minimum 95.0 percent destruction efficiency. Additionally, this test will be used to establish the minimum RTO chamber temperature required to achieve this destruction efficiency. After the minimum oxidizer chamber temperature is established, the facility will no longer track only the temperature setpoint; the permittee will be required to monitor the minimum oxidizer chamber temperature as a 3-hour average. Concurrent with this performance test, a VEE is required from the RTO/Acid Gas Scrubber stack by **Condition 40**.

Condition 39 requires initial performance testing be conducted for Acid Gas Scrubber (CL-2902) HCl control efficiency to demonstrate compliance with the requirement in **Condition 9** for a minimum 99.0 percent control efficiency. It should be noted that previous stack testing for HCl control efficiency was made difficult by physical limitations in the design of the control device. In the January 11, 2006 protocol report, Option 2 of the October 25, 2005 protocol was approved with the following stipulations:

- Method 18 shall be conducted at the RTO inlet location to confirm the conversion of methylene chloride to HCl through combustion
- As there appear to be significant differences in flow from the inlet of the RTO to the outlet of the acid gas scrubber (assumed to be due to combustion air influences), the inlet air flow to the acid gas scrubber shall be presumed to be equal to the outlet air flow of the acid gas scrubber as there are no additional flow influences beyond the RTO outlet.
- Should condensation appear in the inlet Method 26A sample train, the optional cyclone shall be used as stated in section 2.1 of Method 26A.
- Should the test results and applied test methods prove inadequate for determining compliance, BI Chemical shall submit plans for redesigning the control device such that it may be properly tested.

The Stack Test Report dated April 9, 2007, stated that “retesting of HCl shall be performed...HCl emissions were below quantification levels, therefore re-testing shall be conducted per condition 34 when appropriate to ensure continued compliance at higher operating levels.” However, no records of further testing could be located in ECM for the RTO Acid Gas Scrubber (CL-2902). **Condition 39** of the draft permit is intentionally non-prescriptive (simply requiring that initial performance tests shall be conducted for HCl removal efficiency) so that compliance staff have the flexibility to arrange an appropriate test.

B. Continuous Compliance Demonstration

Monitoring of Condenser Outlet Temperature and Scrubber pH and Liquid Flow Rate

The compliance demonstrations affected by this amendment include monitoring condenser outlet temperature to demonstrate proper operation of the process condensers (**Condition 7**), and monitoring the pH and scrubber liquid flow rate for the control of acid and base gases (**Condition 8**). The language in **Conditions 2, 4, 7, and 8** have been changed to better reflect current boilerplate, with the requirements to maintain monitoring devices included in **Condition 2** and **4**, and the monitoring and recordkeeping requirements described separately in **Conditions 7** and **8**.

Previously, the monitoring requirements in **Condition 9** (RTO temperature and Acid Gas Scrubber pH and Flow) had been accepted in place of the process condenser and scrubber requirements for compliance purposes. However, since the facility accounts for the reactor outlet condensers and scrubbers in emissions calculations at the process level, these control devices must be monitored to ensure that they are operating properly.

Condition 9 – RTO Oxidizer Chamber Temperature Monitoring

Condition 9 has been changed so that the RTO must be operated at all times, as was required before the 10/27/2016 SOP amendment that provided for an Alternate Operating Scenario, where the facility was allowed to bypass the RTO and rely on control equipment that was previously determined to be BACT (i.e., condensers) for all areas of the plant except Building S5, provided certain conditions were met. The addition of the Alternate Operating Scenario was intended to

be temporary to allow for initial start-up of the facility when production was severely curtailed as compared to previous operation.

Additionally, in this permit review process, it was discovered that the compliance demonstration included in the permit for the RTO was the temperature setpoint, and not the actual minimum temperature of the oxidation chamber. In order to demonstrate compliance, the facility must monitor the oxidation chamber temperature to ensure that it is equal to or higher than the minimum temperature during the most recent performance test. The facility will be allowed a three-hour averaging period. Since the facility is currently showing compliance by demonstrating that the RTO temperature set point is 1550 °F, this will be accepted until a new performance test is completed. During that initial test, a minimum RTO chamber temperature will be established. At that point compliance with the 95.0% VOC destruction efficiency will be demonstrated by achieving the minimum temperature established during the test as a three-hour average.

Condition 41 - Emission Factor Verification Testing

Condition 41, which details emission factor verification every five years (emissions testing at the RTO inlet), has been changed to better reflect the variability in the length of a batch process vs. a set 12-hour period as previously required, although the length of the test must be 3 hours, at minimum.

A recordkeeping requirement has been added to **Condition 42** (item a.v.), which includes a complete process flow diagram for each batch train for processes reported as required by **Condition 43** (Process Change Reporting). This will enable the compliance inspector to determine exactly which process and control equipment is being operated in a given batch train, for the purposes of determining which monitoring and recordkeeping requirements are applicable.

IX. Title V Review – 9VAC5 Chapter 80 Part II Article 1 or Article 3

After issuance of this permit, the facility does not have a PTE for any pollutant greater than the respective Title V major source threshold. Because the facility is subject to MACT Subpart VVVVVV and installed a control device to maintain the facility's emissions at area source levels after 1990, it is required to obtain a Title V permit in accordance with 40 CFR 63.11494(e). DEQ has received a Title V application from AMPAC Fine Chemicals Virginia, LLC, and the Conditions in this minor NSR/SOP amendment will be incorporated into the facility's Title V Permit by Rule.

X. Public Participation and Notifications

This draft permit must proceed through a public participation period of 30 days. The notice was published in the *Progress-Index* newspaper on February 25, 2022. The comment period begins on

that date and ends on March 28, 2022. Only conditions with a 9 VAC 5-80-850 citation are subject to public comment,

XI. Other Considerations

Confidentiality – The facility submitted a confidential showing for process information (process equipment list for the production of ACC-442.2 and ACC-538.1) submitted on October 22, 2021 in support of emissions calculations. The equipment used to manufacture these products is considered confidential information.

Removal of Alternate Operating Scenario Condition – The March 7, 2019 SOP included a provision that allowed an “Alternative Operating Scenario,” where the RTO could be bypassed provided certain provisions were met. The facility was required to operate BACT control equipment in Buildings S1 & S3 (condensers and scrubbers) while the RTO was bypassed. The RTO could not be bypassed for equipment in Building 5, since the RTO had been determined to be BACT for that equipment at the time of construction. The facility would have to keep emissions below 10 tons of HAP in order to be an area source. Finally, if VOC emissions exceeded 25 tpy, the Alternative Operating Scenario could not be used. This Alternate Operating Scenario was originally included in the October 27, 2016 State Operating Permit amendment issued to UniTao, intended for initial startup of the facility after it had been idled by B.I. Chemical in 2013. However, the initial startup period has passed, and the facility is required to use the RTO/acid gas scrubber, which replaced the MACT Air Control System that was installed to make the facility a synthetic minor source, at all times.

XII. Recommendations

Approval of the draft permit is recommended.

Attachments

Calculation sheets